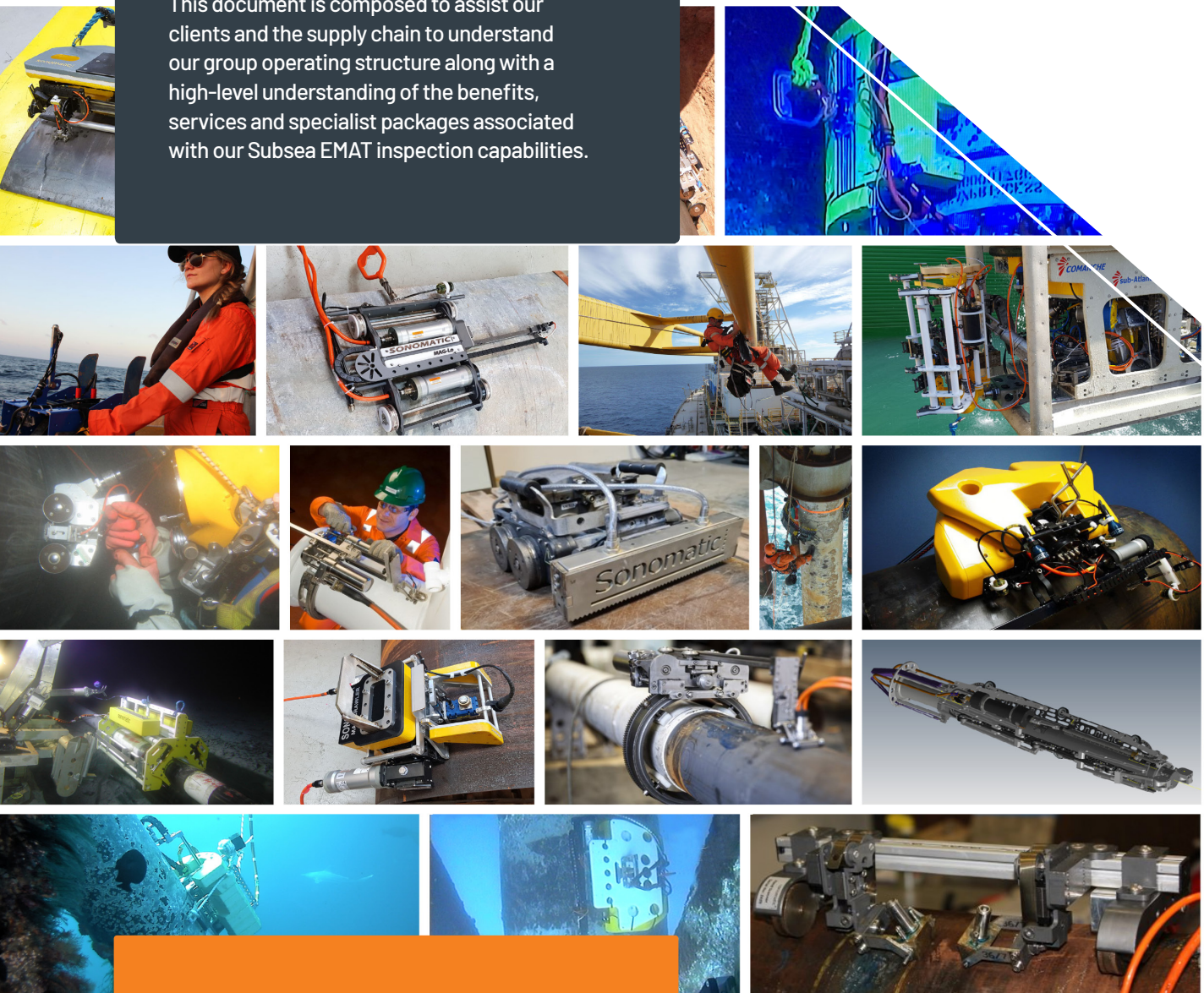
DATA SHEET

SUBSEA EMAT INSPECTION

SONOMATIC

THE PURPOSE

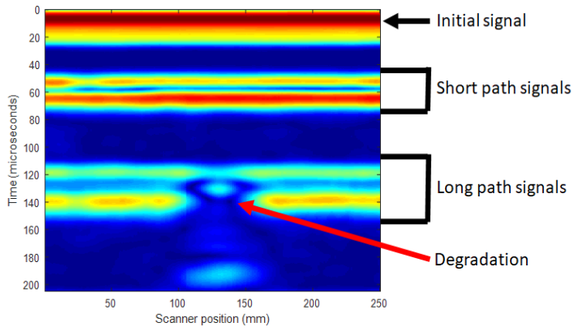
This document is composed to assist our clients and the supply chain to understand our group operating structure along with a high-level understanding of the benefits, services and specialist packages associated with our Subsea EMAT inspection capabilities.



SUBSEA EMAT INSPECTION

Ultrasonic inspection has proven effective on subsea pipelines where it has not been possible to use intelligent pigging. Sonomatic utilises electromagnetic acoustic transducers (EMATs) mounted to an ROV deployable magnetic crawler to support rapid screening of long sections of subsea pipeline.

EMATs use the Lorentz force and magnetostriction to produce ultrasound within a specimen. This allows EMATs to produce Lamb waves or horizontally polarised shear (SH) waves, both of which are guided waves.



Sonomatic's Subsea MAG-ST crawler has been utilised for both subsea and topside applications and is deployed by an ROV onto the region of interest. The crawler is fixed to the pipe using permanent magnetic wheels, and its position can be recorded by onboard encoders and inclinometers to record positional feedback, whilst progress can be monitored using attached cameras.

The subsea EMAT system uses two probes in pitch-catch mode, one at the 11 o'clock position and the other at the 1 o'clock position. The guided waves produced by the EMATs can be used to obtain information on the entire circumference of the pipe from these two positions.

The crawler is driven along the pipe, providing Qualitative information on the full circumference of the pipe at each axial location. Any areas of degradation between the probes will affect the received signals. Should any degradation be detected using the subsea EMAT, follow up inspection techniques such as Quantitative Corrosion mapping from the Sonomatic ROV-iT can be conducted to quantify any areas of concern.

Sonomatic's MAG-ST EMAT crawler has currently been deployed down to -1000m, ultimately depths of 3000m are considered possible. The technique has been validated on samples with a wall thickness of 21 mm and a coating thickness of 2.2 mm and is sensitive to both internal and external degradation. As this technique does not require access to the full circumference of the pipe under inspection, less time is required for dredging, which in turn reduces the vessel time.

APPLICATIONS

- Rapid high coverage screening for subsea pipelines where the upper quadrant is accessible.
- Sampling inspections on dry gas lines to supplement limited coverage detailed inspection to validate that there is no degradation present.
- Screening inspection on multiphase lines to identify regions for follow up by detailed inspection using corrosion mapping.
- Sampling inspection on multiphase lines to validate the conclusions of statistical analysis based on limited coverage detailed inspection.

KEY FEATURES

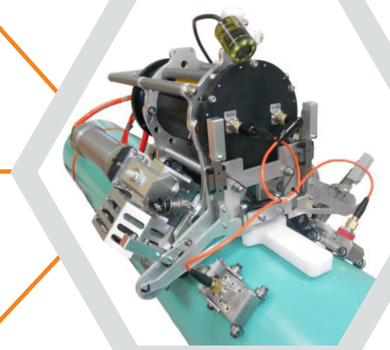
EMATs are non-contact probes and so are less affected by surface conditions than conventional probes.

Sensitive to both internal and external degradation.

ROV-deployable to inspection site.

Encoded measurement.

Suitable for pipe wall thicknesses between 3mm and 15mm.



Deployable to a depth of 1000m.

Remote driving to inspection site.

Inspection through coatings up to 2.2mm thick.

Applicable to pipes with a diameter between 6" and 30".

Settings (such as frequency) can be changed remotely so that areas can be re-scanned without the need to return to surface.

Inclinometers ensure the scanner remains centrally located on the top of the pipe.

Cameras on the scanner allow the surface condition ahead of each probe to be monitored.

QA AND HS&E

Sonomatic operate under an integrated QHSE management system and are committed to the highest quality and safety of service provision | ISO 9001: 2015: 00007140 | ISO 14001:2015:00037371 | ISO 45001:2018:00037372 | ISO 17020: 2012: 4276 | Achilles FPAL Verified: 076712 | SEQual 1988 | British Safety Council Member: S0388440 |

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